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EXAMINER

MacArthur, Sylvia

ART UNIT PAPER NUMBER

1763

DATE MAILED: 02/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/771,673

Applicant(s)

SPREY ET AL.

Examiner

Sylvia R MacArthur

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10/03/2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 15-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/29/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

*Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15, 17, 18, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu (US 6,162,323) in view of Tohru et al (EPO 0335313)

Koshimizu teaches a plasma processing apparatus comprising an etching chamber 102, a piping system is coupled to the openings of the chamber. A first 136 and second fluid feed 144 is provided as illustrated in Fig. 3 as element 142 is a source of a plurality of etchings gases, see col. 6 lines 25-34. The first and second feeds are configured to separately provide the first and second etching gases to the etching chamber via the piping system. Auxiliary chambers are provided between flow restrictors 140 and 148 and their respective valves 138 and 146.

Koshimizu fails to teach that the flow restrictors or valves are specifically shut off valves.

Tohru teaches a method and apparatus for manufacturing a semiconductor device. A plurality of shut-off valves is shown along the pipelines in Fig.1. The lines to the etching chamber are flushed via the discharging chamber 14.

Shut off valves are a suitable means of flow control and art well recognized in the art.

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Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a shut off valve in the system of Koshimizu as illustrated by Tohru.

Note the open/closed state of the shut-off valves is a matter of intended use, which does not merit patentable weight.

Regarding claim 17, a pump 160 is provided by Koshimizu.

Regarding claim 18, a valve 146 is coupled to the second feed.

Regarding claim 20, Koshimizu and Tohru fail to teach that the etching chamber comprises polyvinylidene fluoride (PVDF). Nevertheless, PVDF is a well-known suitable material of construction in harsh chemical environments such as that of an etching chamber.

PVDF is a suitable material of construction as it is art recognized to resist chemical attack and has sufficient mechanical strength (without creep or flow) to maintain necessary stringent mechanical tolerances. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to construction the piping system of the apparatus resulting from the combined teachings of Koshimizu and Tohru.

Regarding, the specific etching gases as cited in claims 21-24 of the claimed invention, the gases listed are a matter of an intended use. The apparatus resulting from the combined teachings of Koshimizu and Tohru are capable of providing such gases. Additionally water is a known catalyst for HF etching.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the cited types of gases in the apparatus of Koshimizu as modified by Tohru.

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4. Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu and Tohru as applied in claims 15, 17, 18, and 20-24 above in further view of Izumi et al (USP 5,022,961).

The teachings of Koshimizu and Tohru are discussed above.

Regarding claim 16, Koshimizu fails to teach a bypass line.

Izumi teaches a plurality of (shut-off) valves is illustrated as well as bypass line 18. Note when the valve of line 26 is shut off the auxiliary chamber is by-passed

The motivation to provide a bypass line in the apparatus of Koshimizu modified by Tohru is to enhance flow control.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a bypass line as taught by Izumi in the apparatus of Koshimizu modified by Tohru.

Regarding claim 19, Koshimizu and Tohru fail to teach the chamber is made of a plastic material. In col. 13 lines 8-15 Izumi further teaches that the etching chamber 12 is formed with Teflon.

The motivation to construct the chamber of a plastic material like Teflon is that it has particularly excellent chemical and physical properties such as its chemical resistance such as HF.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a chamber made of Teflon as it is a suitable plastic to use as a material of construction.

*Response to Arguments*

5. Applicant's arguments with respect to claims 15-24 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 703-306-5690. The examiner can normally be reached on M-F during the core hours of 8 a.m. and 2 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

  
Sylvia R. MacArthur  
January 29, 2004